Vibriosis (non-cholera)

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To identify sources of transmission (e.g., commercially distributed food product or shellfishing area) and to prevent further transmission from such sources.
2. When the source is a risk to only a few individuals (e.g., privately collected shellfish), to inform those individuals how to reduce their risk of exposure.

B. Legal Reporting Requirements

1. Health care providers: notifiable to local health jurisdiction within 3 work days.
2. Hospitals: notifiable to local health jurisdiction within 3 work days.
3. Laboratories: no requirements for reporting.
4. Local health jurisdictions: notifiable to Washington State Department of Health (DOH) Communicable Disease Epidemiology Section (CDES) within 7 days of case investigation completion or summary information required within 21 days.

C. Local Health Jurisdiction Investigation Responsibilities

1. Begin investigation within one working day. Alert CDES about possible cases. If a case has consumed shellfish, determine the source of the shellfish and report details to CDES or DOH Shellfish Programs without delay so that appropriate regulatory actions can be taken.
2. Report all *confirmed* and *probable* cases to CDES through the Public Health Issues Management System (PHIMS) using the DOH vibriosis case report form www.doh.wa.gov/notify/forms/vibriosis.doc.
3. In addition, for confirmed cases, complete the CDC Cholera and Other Vibrio Illness Surveillance Report form http://www.cdc.gov/foodborneoutbreaks/documents/cholera_vibrio_report.pdf and fax to CDES.
4. Persons with non-toxigenic strains of *V. cholerae* are reported as cases of vibriosis. Persons with toxigenic strain of *V. cholerae* (O1 and O139) are reported as cases of cholera on the cholera case report form (www.doh.wa.gov/notify/forms/cholera.doc) and the CDC Cholera and Other Vibrio Illness Surveillance Report form.
5. Although laboratories are not required to submit isolates to DOH Public Health Laboratories (PHL), request that laboratories submit isolates for speciation. Speciation is important for tracking the types of *Vibrio* organisms in our waters.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agents

The most important non-cholera human pathogens in the *Vibrio* genus are *Vibrio parahaemolyticus*, *V. vulnificus*, non-toxigenic *V. cholerae,* and *V. mimicus.* Other species that less commonly cause human illness include *V. alginolyticus*, *V. hollisae*, and *V. fluvialis*. *V. parahaemolyticus* and *V. vulnificus* are gram negative, halophilic (i.e. salt-requiring) bacteria that naturally inhabit coastal waters in the United States and Canada and are present in higher concentrations during warm summer months.

B. Description of Illness

Vibrio organisms can cause gastroenteritis, bacteremia/septicemia, and wound infections. *Vibrio parahaemolyticus* primarily causes a diarrheal illness characterized by sudden onset of watery diarrhea often accompanied by abdominal cramping. Bloody diarrhea (<15% of cases), vomiting, headache, and low grade fever also can occur. *V. vulnificus* is a virulent organism that most commonly causes soft tissues infections and septicemia in persons with immunocompromising conditions, liver disease and other chronic illnesses. Septicemia can occur after ingestion of the organism in undercooked shellfish or exposure of a wound to seawater containing the organism. *V. vulnificus* is responsible for almost all the seafood-related deaths in the United States; the case fatality rate is approximately 25%. *V. alginolyticus* most commonly causes cellulitis and acute otitis media or externa while nontoxigenic (non-O1, non-O139) *V. cholerae* causes a diarrheal illness.

C. Vibriosis in Washington State

The number of vibriosis cases varies from year to year depending on environmental conditions. In 2006, a large outbreak of vibriosis occurred in Washington State involving at least 110 residents. *Vibrio parahaemolyticus* is endemic to the estuaries of Washington State as are several other *Vibrio* species. *V. vulnificus* infections usually result from exposures outside of Washington. Most vibriosis cases in the United States occur between April and October. During the warmer months of the year, the DOH Shellfish Programs routinely monitor shellfish from the Washington coast for *Vibrio* organisms and will close beds to harvesting if *Vibrio* levels become dangerously high or if growing areas are epidemiologically linked to human illness.

D. Reservoirs

V. parahaemolyticus and *V. vulnificus* are halophilic (i.e. salt-requiring) bacteria that naturally occur in coastal waters. Although *V. parahaemolyticus* is ubiquitous in the United States (including Washington State), *V. vulnificus* occurs at highest concentrations along the Gulf coast and in the Northeast. Molluscan shellfish become contaminated with the organism while filter feeding.

Nontoxigenic (non-O1, non-O139) *V. cholerae* are nonhalophic bacteria that exist in both freshwater and salt water sources.

E. Modes of Transmission

In the United States, most sporadic cases of vibriosis (non-cholera) follow the ingestion of raw or inadequately cooked seafood, particularly oysters. Commonly recognized

vehicles or mechanisms of transmission include:

1. Ingestion of inadequately cooked or raw seafood.
2. Ingestion of other foods cross-contaminated with seawater or inadequately cooked or raw seafood.
3. Exposure of cuts or wounds to seawater.

F. Incubation Period

Following ingestion 12–24 hours; range, 4–96 hours.

G. Period of Communicability

Person-to-person transmission probably does not occur, suggesting the infective dose for immunocompetent persons is high. There is no carrier state.

H. Treatment

Treatment for gastroenteritis primarily includes oral rehydration and supportive therapy. Antibiotics are generally not necessary in most cases of *V. parahaemolyticus* gastroenteritis but may be indicated if the diarrhea is severe. Cellulitis and septicemia caused by *V. vulnificus* require rapid treatment with appropriate antibiotics.

3. CASE DEFINITIONS

A. Clinical Criteria for Diagnosis

Vibriosis should be suspected if a patient has watery diarrhea and has eaten raw or undercooked seafood, especially oysters, or when a wound infection or sepsis occurs after exposure to seawater.

B. Laboratory Criteria for Diagnosis

Isolation of a pathogenic *Vibrio* species from a clinical specimen.

C. Case Definition

1. Probable: a clinically compatible case that is epidemiologically linked to a confirmed case.
2. Confirmed: a case that is laboratory confirmed.

4. DIAGNOSIS AND LABORATORY SERVICES

A. Diagnosis

The diagnosis is made by isolation of *Vibrio* species from stool, blood or wound exudates. Laboratory personnel need to be notified when vibriosis is suspected because identifying the organism by culture requires special techniques that are not routinely performed.

B. Tests Available at PHL

PHL provides isolate confirmation/identification for *Vibrio* species. In an outbreak situation, PHL will also culture stool for *Vibrio* species. Contact CDES for approval prior to submitting specimens.

C. Specimen Collection

For stool culturing, use a sterile applicator swab to collect stool, insert the swab into Cary-Blair transport medium, break off the stick at the score line below the lid of the bottle, push the cap on tightly, seal with pressure-sensitive labeling tape and mail immediately.

Please enclose a completed PHL Enteric Bacteriology form (available at: http://www.doh.wa.gov/EHSPHL/PHL/Forms/EntericBacteriology.pdf) with all isolates and stool specimens.

5. ROUTINE CASE INVESTIGATION

Interview the case and others who may be able to provide pertinent information.

A. Evaluate the Diagnosis

The diagnosis is made by isolation of vibrios in clinical specimens. Although laboratories are not required to submit isolates to PHL, request that laboratories submit isolates for speciation. Speciation is important for tracking the types of *Vibrio* organisms in our waters.

B. Identify Potential Sources of Infection

Take a detailed food history. Ask about the following during the 4 days before onset:

1. Any acquaintances or household members with similar illnesses. Obtain the person's name, diagnosis, and telephone number or address. (Note: anyone meeting the probable case definition should be reported and investigated in the same manner as a confirmed case).
2. Consumption of raw/undercooked shellfish.
3. Handling of raw shellfish.
4. Any restaurant meals. Obtain the name and location of the restaurant and the date of the meal.
5. Travel outside the United States.
6. Skin exposure to seawater.
7. Consumption of untreated water.

C. Identify Potentially Exposed Persons

If a shellfish vehicle is identified, interview others who ate the same item.

D. Environmental Evaluation

If illness was associated with shellfish, interview the patient and/or contact the restaurant to determine what shellfish was consumed, and how it was prepared and handled prior to consumption. Since *Vibrio* organisms proliferate rapidly at room temperatures, shellfish containing very low levels of organisms at harvest can become highly contaminated if not handled properly.

As soon as possible, obtain the shellfish labeling tags from the retail sites and collect information about the supplier and harvest site of the shellfish. Complete the CDC

Cholera and Other Vibrio Illness Surveillance Report form surveillance report form (http://www.cdc.gov/foodborneoutbreaks/documents/cholera_vibrio_report.pdf) and convey the shellfish source information to either CDES (206-418-5500 or 877-539-4344) or the DOH Shellfish Programs (360-236-3330).

In an outbreak situation, consult with CDES or the DOH Shellfish Programs regarding sampling of implicated shellfish for testing at DOH. In general, shellfish samples are not obtained for sporadic cases or from consumers.

6. CONTROLLING FURTHER SPREAD

A. Infection Control Recommendations

1. Hospitalized patients should be treated with standard precautions. Contact precautions should be used for diapered or incontinent persons for the duration of the illness or to control institutional outbreaks.
2. The case should be educated regarding effective hand washing, particularly after using the toilet, changing diapers, and before preparing or eating food.
3. As indicated, the case should be instructed on the importance of proper food handling and adequate cooking of shellfish; and avoidance of cross-contamination of other foods by raw shellfish or contaminated seawater.

B. Case Management: Follow up culturing not required.

C. Contact Management

Household and other close contacts are generally not at risk for infection since the infection is probably not directly transmitted person-to-person.

D. Management of Other Exposed Persons

Other exposed persons should be educated about symptoms and told to consult a health care provider for diagnostic testing and treatment if indicated

E. Environmental Measures

The DOH Shellfish Program will decide whether a recall of product or closure of a harvesting area is warranted after receiving the information collected in Section 5D above.

7. MANAGING SPECIAL SITUATIONS

A. Case is a Food Handler

Instruct the case not to work as a food handler until diarrhea ceases. With the exception of particularly suspicious circumstances, no further follow-up is warranted.

B. Food Served at a Public Gathering Implicated

Determine the source of shellfish and how the shellfish were handled prior to consumption.

C. Case Works at a Health Care or Residential Care Facility

Determine if there has been any unusual incidence of diarrheal illness within the past week. If so, investigate these reports to identify possible common-source outbreaks or

any continuing sources of exposure. If indicated, conduct a sanitary inspection of the facility and obtain food history related to consumption of shellfish. The extent of further investigation depends on the circumstances.

D. Outbreaks

If you suspect an outbreak, contact CDES and begin an investigation immediately.

8. ROUTINE PREVENTION

A. Immunization Recommendations: None

B. Prevention Recommendations

1. Do not eat raw oysters or other raw shellfish, particularly if you are immunocompromised or have chronic liver disease. *V. parahaemolyticus* does not alter the appearance, taste, or odor of oysters.
2. Before harvesting shellfish, consult the 24 hour PSP Hotline 1-800-562-5632 or the DOH website: http://ww4.doh.wa.gov/gis/mogifs/biotoxin.htm for information on shellfish harvest areas closed due to marine biotoxins or *Vibrios*.
3. Cook molluscan shellfish (oysters, clams, and mussels) thoroughly so that they reach a minimum internal temperature of 145°F (63°C) for 15 seconds. Do not eat those shellfish that do not open during cooking. Note that cooking does not affect marine biotoxins.
4. Avoid cross-contamination of cooked seafood and other foods with raw seafood and juices from raw seafood.
5. Keep shellfish refrigerated or cold prior after purchase until preparation.
6. Eat shellfish promptly after cooking and refrigerate leftovers.
7. Wear protective clothing (e.g., gloves) when handling raw shellfish.
8. Avoid exposure of open wounds or broken skin to warm salt or brackish water, or to raw shellfish harvested from such waters.